

Application No. 10/038,255

(Jebaraj)

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24. A self-contained air-conditioned enclosure assembly providing a comfortable personal environment for occupants comprising:

- a. an enclosure assembly means having an interior, suitable to be fitted on a slab, whereby thermally confining the interior space above said slab, and said slab having an underside,
- b. a frame means for structurally supporting said enclosure, comprising plurality of frame members and plurality of corner connector means for interconnecting said frame members,
- c. a roof disposed in spaced relation above said slab having a plurality of support straps for suspending said roof from said frame means,
- d. a plurality of upright sidewall means attached to said roof comprising a plurality of wall sheets and a plurality of spacer strips, said sidewall means having an upper portion and a lower portion,
- e. a plurality of first means for securing the upper portion of said sidewall means to said roof,
- f. an exit air opening in said sidewall means,
- g. a supply air opening in said sidewall means located vertically at a substantial distance below said exit air opening,
- h. an air-conditioner means for conditioning the interior space of said enclosure, comprising:
 - i) a main housing having four vertical sides, a cornice, a floor and an interior space,
 - ii) an air plenum located in said main housing bounded on top by the cornice of said main housing and having a mid portion and a bottom end,
 - iii) an exit air duct means extending from the cornice of said main housing, communicating with said air plenum, having an extremity that is connected to said exit air opening for conveying air exiting the enclosure to said air-conditioner means,
 - iv) a first air moving devise such as a fan motor assembly located within said air plenum for inducing air movement from said enclosure to said air-conditioner,
 - v) a heat transfer means comprising an evaporator coil and a heater element assembly, fixed below said air moving devise at the bottom end of said air plenum, whereby air moved by said first air moving devise through said heat transfer means is thermally conditioned,

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- vi) a supply air duct means extending horizontally from one side of said main housing located below said heat transfer means having four walls, an extremity that is connected to said supply air opening, and the bottom wall of said supply air duct means extends inside said main housing thereby horizontally partitioning said main housing whereby conditioned air from said heat transfer means is conveyed to the enclosure,
- vii) a second air moving devise such as a fan blower assembly fixed below the bottom wall of said supply air duct,
- viii) an exhaust air duct connected to said second air moving devise and extends through one of the sides of said main housing on the opposite side of said supply air duct means,
- ix) a condensing coil bank fixed below said second air moving devise whereby heat is rejected from said condensing coil bank to the air moved by said second air moving devise,
- x) a compressor chamber located below said condensing coil bank having a compressor fixed on the floor of said main housing, isolated from said air plenum by the bottom wall of said supply air duct means,
- xi) a control panel attached vertically at the extremity of and within said supply air duct/

2.
25. The enclosure system of claim 24 (a), wherein the enclosure assembly is sufficiently large to accommodate plurality of occupants and said slab preferably be a bed mattress.

3.
26. The enclosure system of claim 24 (b), wherein the frame means includes frame members and corner connectors to form a rectangular configuration and have plurality of vertical extensions or legs that straddle said slab.

4.
27. The enclosure system according to claim 26, wherein said frame members are made of telescoping tubes of suitable size, preferably plastic tubes, assembled with said corner connectors whereby the size of said frame means and the enclosure can be varied.

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5.
28. The enclosure system of claim 24 (d), wherein said roof further including a vertical rim or lip along the periphery and thereof preferably be made of lightweight rigid board having suitable thermal insulation properties.

6.
29. The enclosure system of claim 24 (d), wherein said support straps attached to said roof wraps around said frame members and forms a loop and fastens on to itself, preferably using hook and loop fasteners.

7.
30. The enclosure system of claim 24 (d), wherein the sidewall means having plurality of wall sheets sandwiching said spacer strips, said wall sheets are preferably transparent plastic sheets, and the lower portion of said sidewall means wrap around the underside of said slab thereby thermally isolating the enclosure interior.

8.
31. The enclosure system of claim 24 (d), wherein air space is formed between said wall sheets, by fixing plurality of said spacer strips of suitable thickness, thin, flexible, lightweight, preferably strips of foam sheets or sponge, located at sufficient intervals thereby enhancing the thermal resistance of the sidewalls.

9.
32. The enclosure system of claim 24 (e), wherein the first means for securing the upper portion of said sidewall means to said roof, further comprising of plurality of clips and plurality of shields.

10.
33. The enclosure system of claim 24 (e), 24 (d) and 24 (e), wherein sidewall means is overlaid to cover the lip of said roof and is held by plurality of said shields and secured by plurality of said clips, said shields protect said wall sheets and said spacer strips against structural damage from said clip.

11.
34. The enclosure system of claim 24 (f) and 24 (g), wherein said exit air opening and said supply air opening further include elastic rims that wrap tightly around connected air ducts.

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12.
b 35. The air-conditioner means as claimed in claim 24 (h) and ~~sub para (i)~~ wherein the main housing further include a plurality of wheels attached to the floor of said main housing whereby the air-conditioner means can be readily moved from one place to another.

13.
b 36. The air-conditioner means as claimed in claim 24 (h) and ~~sub para (ii)~~, wherein said air plenum further includes a means for filtering air and fixed horizontally in the mid portion of said air plenum for purifying air.

14.
b 37. The air-conditioner means as claimed in claim 24 (h) and ~~sub para (iii)~~ and (vi) wherein the ducts further includes plurality of lips at the extremity forming a narrow channel, to receive respective elastic rims of the enclosure opening thereby forming air tight sealing between the enclosure and said air- conditioner means.

15.
b 38. The air-conditioner means as claimed in claim 24 (h) and ~~sub para (iv)~~ and (vii), wherein the air moving devises such as a fan assembly or blower assembly further includes fan or blower, motor, air intake hood, housing and other essential element.

16.
b 39. The air-conditioner means as claimed in claim 24 (h) and ~~sub para (viii)~~, wherein said exhaust air duct is preferably flexible, collapsible, and light weight round air duct, whereby air moved by said second air moving devise is exhausted.

17.
b 40. The air-conditioner means as claimed in claim 24 (h) and ~~sub para (x)~~, wherein said compressor chamber further have plurality of air holes to form an air grill on the walls of said main housing just above said main housing floor whereby outside air is added to said compressor chamber.

18.
b 41. The air-conditioner means as claimed in claim 24 (h) and ~~sub para (xi)~~, wherein said control panel further include a temperature sensing means, a humidity sensing means, a fresh air control knob, a temperature control means, and humidity control means, whereby the air-conditioner means operation is controlled to maintain optimal comfort of the enclosure interior.

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¹⁹ 42. The control panel according to claim ¹⁸ 41, further include a light source, clock, time alarm and other such accessory gadgets.

²⁰ 43. The air-conditioner means as claimed in claim ¹ 24 ~~(h) and sub-para (i)~~ wherein the main housing further includes a vertical interior wall and a fresh air chamber of rectangular cross-section formed by the interior wall and located on one side of said housing,

having an open upper end, a bottom formed by the main housing floor, and plurality of air holes above the bottom, on the sides of said main housing bounding said fresh air chamber,

whereby said fresh air chamber communicates through the open upper end only with said air plenum and is isolated from said compressor chamber and the rest of said housing interior thereby fresh air is supplied to said air plenum through the plurality of air holes.

²¹ 44. The fresh air chamber according to claim ²⁰ 43, further includes a heat transfer duct having a top end communicating with said air plenum and an opposed end connected to said compressor chamber whereby some air from said air plenum is exhausted through said compressor chamber and said exhaust air duct.

²² 45. The heat transfer duct according to claim ²¹ 44, made preferably of flexible, collapsible, and lightweight duct structure with sufficient heat transfer property whereby heat is transferred between the air streams in said heat transfer duct and the air streams in said fresh air chamber to effect substantial thermal energy recovery in the air streams.

²³ 46. The heat transfer duct according to claim ²¹ 44, further includes an air damper pivotally mounted within said heat transfer duct, mechanically linked to said fresh air control knob by plurality of control rods and links whereby air flow from said air plenum to said compressor chamber can be varied.